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ABSTRACT

The purpose of this study is to provide the Florida State Advisory Council on Vocational and Technical Education with the baseline data needed to make a valid evaluation of preservice and inservice teacher education programs. District directors and community college deans were asked to respond to a comprehensive questionnaire regarding supply and demand of vocational teachers. University teacher educators were asked to supply data regarding capacity of preservice programs. Results of the study indicate the supply and demand of vocational teachers in Florida are fairly well balanced. Eight recommendations are given to expedite regular data collection concerning supply and demand. (Authors)

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BASELINE DATA FOR TEACHER EDUCATION

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The determination of the supply of and demand for teachers is a recurring problem for vocational educators responsible for planning for teacher education. Swanson (1974) reported that data available at the national level are fragmentary, making it impossible to project more than a rough estimate of the trends in supply and demand. Evans (1973) noted that there is an absence of responsiveness to the changing supply and demand for vocational teachers.

The absence of data on which to base decisions regarding vocational teacher education is not limited to the national level. At the state level, Harris (1973) found it necessary to collect data in addition to that which was available in order to develop a master plan for vocational teacher education. With regard to theoretical projections of the supply and demand for vocational teachers, Copa and Korpi (1974) indicated the need for new models for determining the supply of and demand for vocational personnel.

Ferns (1971) stated that a comprehensive inventory of Michigan's vocational and technical education personnel would be highly desirable for sound planning. He contended that basic to identifying occupational education personnel problems for the 1970's was an investigation of the characteristics of existing

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vocational-technical personnel, existing training systems and productivity of teacher education training programs.

Objectives of the Inquiry

This study was designed (1) to develop and implement models for determining the supply of and demand for vocational and technical personnel by vocational education program area, level, and area of the state, and (2) to identify discrepancies which existed between the supply and demand for vocational personnel.

Theoretical Framework

The formulative method of Goldstein and Swerdloff (1967) adapted by Copa and Korpi (1974) was used to estimate the theoretical upper and lower limits of supply of vocational teachers within program areas and geographic regions of the state. The model, shown in Figure 1, indicates that outflow factors decrease the supply and that inflow factors increase the supply of vocational teachers from one time period to another. The mobility of personnel within and among geographic regions precluded an estimate of the supply of vocational education teachers at the local district level. Therefore, it was assumed that the percentage of vocational education teachers in a given region was a reliable index of the percentage of the total state supply of vocational education teachers to that region.

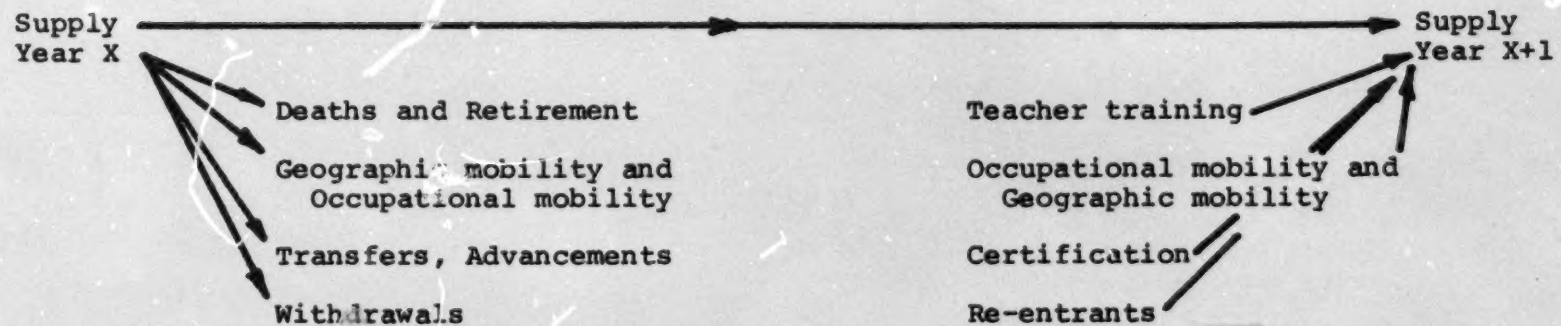
Methods

The supply model required that specific types of data be collected. Data which were available from the Division of Vocational Education, Florida Department of Education, and the Department of Commerce were collected. The need for additional

Figure 1

MODEL FOR ESTIMATION OF SUPPLY

Supply Year X	+	Inflow Factors	-	Outflow Factors	=	Supply Year X+1
Employed Personnel		Teacher Training		Deaths		
Unemployed Personnel		Entrants from other occupations		Retirements		
		Geographic mobility into Florida		Geographic mobility out of Florida		



data was determined by comparing the requirements of the supply model with existing data. The supply model, expressed by the following equation, indicated the types of information needed and sources used to obtain the information:

$$(E_{fc} + UE_{fc}) + (TP + OC + E_{ac} + UC_{ac}) - (D + R + T + GM) = \text{Supply}_{(X+1)}$$

where,

$(E_{fc} + UE_{fc})$ = Supply for year X

$(TP + OC + E_{ac} + UC_{ac})$ = Inflow factors

$(D + R + T + GM)$ = Outflow factors

E_{fc} = persons employed with Florida certification

UE_{fc} = persons unemployed with Florida certification

TP = teacher education training programs

OC = entrants from other occupations

E_{ac} = persons employed with alien certification

UE_{ac} = persons unemployed with alien certification

D = deaths

R = retirements

T = transfers

GM = geographic mobility out-of-state

Data for E_{fc} and UE_{fc} were obtained from the Bureau of Certification, Department of Education. Data for TP were obtained from current university funding guides (i.e. annual reports on teacher education productivity from the nine regional universities submitted to the Division of Vocational Education, Department of Education). Data for OC was calculated assuming that the ratio of temporary to regular teaching certificates was equal to the ratio of the supply of teachers from business and industry to supply from teacher education training programs.

Data for E_{ac} and UE_{ac} were taken from information available from the Department of Commerce indicating the population of employable persons (age 25-64) in the state. These data were extracted assuming that the population change within the 25-64 age group was composed primarily of net migration. Estimates of D, R, T, and GM were obtained from the research questionnaires utilized in the study. The number of replacements in teaching positions were assumed to be equal to vacancies which were caused by death, retirement, transfer, or emigration.

It was assumed that employer needs within vocational and technical fields should ideally control the demand for teaching personnel, however, at the time of the study, demand for teachers was controlled primarily by student enrollment. Therefore, demand for vocational teachers was examined using two indices:

- (1) Projection of student enrollment across vocational and technical fields, and
- (2) Projected growth of occupational employment across vocational and technical fields.

These demand estimates were best determined by the number of positions filled during the past year and by determining the number of turnovers and additions anticipated for the next year.

In addition to data collected as required by the supply model, data regarding the productivity and capacity of teacher education programs were collected in order to determine the discrepancy between teacher education productivity and capacity.

When existing data had been collected, the need for additional data was determined and data collection instruments

were developed for local school districts, community colleges, and teacher educators. Following a pilot test of the instruments, 105 questionnaires were mailed to district vocational directors and community colleges; 28 questionnaires were mailed to the nine state universities.

Results and Discussion

After a second mailing and a telephone follow-up had been accomplished, 89 percent of the questionnaires sent to local districts and community colleges were returned. The teacher education questionnaires yielded an 86 percent return.

The application of the supply model resulted in the theoretical lower and upper statewide estimates of supply of vocational teachers shown in Table 1. Upper estimates were calculated using the supply model with all factors included. Lower estimates were calculated using the supply model with the factors OC , E_{ac} , and UE_{ac} excluded. From these data, it may be observed that by 1981, the expected percentage change in supply of vocational teachers ranges from an increase of 16.0 percent for business education (upper estimate) to a decrease of 10.2 percent for health and public service (lower estimate).

The theoretical supply model projected an oversupply of vocational teachers since individuals included in the model could opt to accept non-teaching positions. Thus, an estimate of supply of vocational teachers was obtained from information supplied by the local districts and community colleges. District directors and community college deans were asked to supply the number of applicants normally received per position vacancy.

These data, shown in Table 2, were calculated by summing the number of applicants per position vacancy and dividing by the total number of responses. In addition, the data indicates that there were no program areas in the local school districts where the average number of applicants per position vacancy exceeded ten on a statewide basis. For community colleges, only three program areas (i.e., business education, distributive education, and health and public service education) exceeded ten applicants per position vacancy on a statewide basis.

Ten applicants per position vacancy was considered to be the minimum desirable number that program administrators would like to review. The number of applicants per position vacancy, representing the most practical index of supply of vocational teachers, showed that the supply of teachers could not be considered excessive. Further, this index indicated that in most cases the supply of teachers could be considered less than desirable.

Similar to the results reported by Ferns (1971), the difficulty in quantifying demand was observed. Therefore, demand estimates for vocational teachers were represented by the number of positions filled during the past year and by the number of additions and replacements anticipated for the next year. This index to demand provided the best estimates of the need for vocational teachers through 1981. These data may be observed in Tables 3 and 4 for both the school districts and community colleges. It may be observed that the statewide demand at the local district level through 1980-81 ranged from a high of 328

for industrial teachers to a low of 55 for diversified education teachers. Similarly, community colleges reported a statewide cumulative demand through 1980-81 ranging from a high of 81 teachers needed for health and public service training programs to a low of essentially zero for diversified training programs.

Additional indices of supply and demand were developed by calculating the following ratios: (1) teacher education productivity to the unduplicated number of vocational teachers employed. These indices, Tables 5 and 6, showed that the supply and demand of vocational teachers in the state are fairly well-balanced. The data shown in Table 5 indicated that there were less than one vocational teacher produced from teacher education training programs for every ten teachers currently employed in all program areas. Similarly, the data given in Table 6 showed that fewer than ten vocational teachers were needed for every 100 teachers currently employed in all program areas with the exception of health and public service programs.

Supply and demand balance across program areas is further reflected in Table 7 which presents the statewide supply and demand discrepancy for vocational teachers. While there was a greater demand for health and public service teachers than the supply, there was a greater supply of business education teachers than the demand.

The results of the study indicated that it would be possible to increase new supply in most occupational areas if the preservice programs were operating at full capacity. The discrepancy in preservice program productivity and capacity

is provided in Table 8. It may be observed that most preservice programs indicated their capacity to be greater than current productivity.

In program areas where there was an apparent oversupply, preservice programs were producing above capacity (considering current resources). When oversupply was found it could be attributed to either preservice programs producing above capacity or the inflow of personnel from other states, or both. In program areas where a tendency toward undersupply was observed the personnel responsible for preservice teacher education programs reported operating at less than full capacity.

Conclusions and Recommendations

The data collected in the study lead to the conclusion that supply and demand of vocational teachers in Florida are fairly well balanced, and that current productivity of teacher education institutions is not creating an oversupply of teachers. In addition, teacher education institutions are not producing at full capacity. The data also indicated a considerable effect on supply and demand resulted from the migration of teachers into the state.

The absence of major discrepancies between supply and demand for vocational teachers supports the conclusion that further proliferation of preservice programs is not necessary. Rather, the discrepancies can be corrected by utilizing available resources in existing programs.

Demand for vocational teachers is based on decisions regarding staffing at the local school district and community colleges rather than on labor market trends. Therefore, it was

recommended that the pulse of the demand for vocational teachers should be taken at this level. The number of additions, turn-overs, and deletions by program area and by level should be obtained annually. In addition, demand estimates from long-range projections regarding the need for vocational teachers should be obtained annually. This recommendation, when implemented, would enable educational planning personnel to take a forward look as well as a backward look at the needs for instructional personnel.

The results of the study supports the recommendation that longitudinal data regarding supply of vocational teachers for each program area should be ascertained periodically. The computation of longitudinal supply should take into account the number of persons not available for teaching as well as inflow factors other than preservice productivity.

Much of the data needed for annual and long-range planning was available at the time this study was conducted. Available data should be augmented with additional data from which an annual report of teacher education activities could be produced. The format and types of data collected in this study are representative of the steps necessary for implementing such a systematic data collection system. Such a system would provide an additional step necessary for planning regarding the supply and demand for vocational teachers. The data collected could be assembled in one location for use by decision makers.

As noted earlier, the assumption was made that student enrollment was an accurate indicator of demand for vocational teachers. In order for this assumption to be accurate, local

school districts and community colleges should base training programs on sound occupational forecasts. Only with sound occupational forecasts can the estimate of demand for vocational teachers reflect occupational needs.

Table 1

LOWER & UPPER SUPPLY ESTIMATES OF VOCATIONAL-TECHNICAL EDUCATION PERSONNEL
(BY PROGRAM AREA IN THE STATE OF FLORIDA)

Program Area		Year						% of Change
		1975- 1976	1976- 1977	1977- 1978	1978- 1979	1979- 1980	1980- 1981	1976- 1981
Agri-business Education	Lower	1476	1501	1526	1552	1578	1604	8.0
	Upper	1476	1510	1556	1596	1636	1676	11.9
Business Education	Lower	2997	3104	3201	3298	3395	3492	14.2
	Upper	2997	3111	3225	3339	3453	3567	16.0
Distributive Education	Lower	2129	2182	2235	2288	2341	2394	11.1
	Upper	2129	2202	2275	2348	2421	2494	14.6
Technical & Industrial	Lower	7333	7448	7407	7444	7482	7557	3.0
	Upper	7333	7464	7595	7725	7857	7988	8.2
Health and Public Service	Lower	1821	1782	1753	1723	1691	1652	-10.2
	Upper	1821	1801	1781	1761	1742	1723	- 5.7
Diversified Education	Lower	2185	2154	2136	2117	2098	2079	- 5.1
	Upper	2185	2160	2144	2128	2112	2096	- 4.2
Industrial Arts Education	Lower	2433	2438	2439	2441	2443	2444	0.5
	Upper	2433	2451	2469	2487	2505	2523	3.6
Home Economics Education	Lower	5591	5616	5641	5666	5691	5716	2.2
	Upper	5591	5622	5653	5684	5715	5746	2.7

Table 2

AVERAGE NUMBER OF APPLICANTS PER POSITION VACANCY (NORMAL)

Supply of Vocational and Technical Personnel

	REGION I	REGION II	REGION III	REGION IV	REGION V	STATE TOTAL	
LOCAL SCHOOL DISTRICTS	Administration	4.41	4.50	6.44	6.10	6.40	5.23
	Guidance and Counseling	5.17	3.40	9.60	16.00	8.00	7.85
	Agri-Business	3.64	2.50	5.44	2.29	2.50	3.40
	Business Education	4.27	2.72	10.78	5.38	22.83	8.00
	Distributive Education	3.08	2.00	7.38	4.57	32.50	8.86
	Health and Public Service	2.82	2.63	2.88	2.86	5.83	3.23
	Home Economics	5.45	3.50	8.33	5.29	12.20	6.40
	Industrial Education	3.43	3.38	5.56	2.67	6.60	4.24
	Industrial Arts Education	4.67	1.71	5.67	4.50	8.00	4.77
	Diversified	3.09	2.43	5.56	4.13	6.40	4.25
COMMUNITY COLLEGES	Administration	4.67	11.25	3.33	12.50	4.33	4.89
	Guidance and Counseling	5.00	3.75	5.00	17.50	4.33	7.27
	Agri-Business	1.50	6.67	3.70	16.67	1.00	5.63
	Business Education	41.50	11.70	14.10	18.00	5.75	19.83
	Distributive Education	28.25	5.20	13.40	16.00	0.75	16.25
	Health and Public Service	13.00	7.50	20.00	16.00	8.25	12.23
	Home Economics	10.00	5.25	4.33	18.00	1.50	5.61
	Industrial Education	5.00	7.25	8.70	11.25	2.25	5.33
	Industrial Arts Education	----	7.50	2.50	----	1.50	4.20
	Diversified	----	6.00	5.00	3.50	1.67	3.63

Source of Information - Local District Questionnaire

Table 3

NEW DEMAND FOR VOCATIONAL-TECHNICAL EDUCATION PERSONNEL
(Number)

LOCAL SCHOOL DISTRICTS

	REGION I	REGION II	REGION III	REGION IV	REGION V	STATE TOTALS
Administrative						
1974-1975	9	1	14	2	1	27
1975-1976	5	6	8	3	3	25
1976-1977	3	1	10	4	0	18
1980-1981*	11	3	17	16	3	50
Guidance and Counseling						
1974-1975	9	5	23	11	15	63
1975-1976	4	4	16	13	16	53
1976-1977	4	3	5	22	9	42
1980-1981*	14	5	10	29	21	79
Agri- Business						
1974-1975	13	6	10	8	19	56
1975-1976	18	3	11	14	8	54
1976-1977	14	7	13	13	15	62
1980-1981*	18	13	20	20	3	74
Business Education						
1974-1975	10	13	35	42	50	150
1975-1976	9	7	27	16	20	69
1976-1977	9	7	11	25	16	64
1980-1981*	21	11	51	61	32	176
Distributive Education						
1974-1975	6	5	12	8	4	35
1975-1976	7	3	5	6	21	42
1976-1977	3	3	8	8	27	49
1980-1981*	14	6	40	16	46	122
Health and Public Service						
1974-1975	2	4	9	20	36	71
1975-1976	4	6	11	32	32	85
1976-1977	3	2	6	20	35	66
1980-1981*	11	8	23	38	67	147
Home Economics						
1974-1975	9	7	39	40	34	129
1975-1976	18	5	19	19	21	82
1976-1977	2	8	7	29	23	69
1980-1981*	18	25	16	46	70	175
Industrial						
1974-1975	32	27	31	38	31	159
1975-1976	47	26	30	18	28	149
1976-1977	21	16	21	47	24	129
1980-1981*	37	65	54	82	90	328
Industrial Arts						
1974-1975	21	16	19	10	89	155
1975-1976	10	11	16	12	43	92
1976-1977	9	5	11	22	56	103
1980-1981*	14	22	21	36	66	159
Diversified Education						
1974-1975	4	3	8	9	4	28
1975-1976	4	1	5	13	3	26
1976-1977	3	1	3	8	18	33
1980-1981*	10	3	12	15	15	55

Source - Local District Questionnaire

*Cumulative through 1980-1981

Table 4

NEW DEMAND FOR VOCATIONAL-TECHNICAL EDUCATION PERSONNEL
(Number)

COMMUNITY COLLEGES

	REGION I	REGION II	REGION III	REGION IV	REGION V	STATE TOTALS
Administrative						
1974-1975	3	1	3	1	2	10
1975-1976	1	2	1	1	2	7
1976-1977	1	3	1	1	2	8
1980-1981*	4	1	5	0	2	12
Guidance and Counseling						
1974-1975	1	0	1	0	4	6
1975-1976	1	0	0	6	4	11
1976-1977	1	0	0	4	0	5
1980-1981*	0	1	1	4	1	7
Agri-Business						
1974-1975	1	3	1	0	1	6
1975-1976	1	0	0	0	0	1
1976-1977	1	0	1	1	1	4
1980-1981*	2	3	2	0	3	10
Business Education						
1974-1975	4	1	4	4	4	17
1975-1976	1	1	5	8	3	18
1976-1977	3	1	5	4	9	22
1980-1981*	10	8	13	9	2	42
Distributive Education						
1974-1975	2	0	0	2	0	4
1975-1976	1	0	0	0	2	3
1976-1977	3	0	3	2	1	9
1980-1981*	1	0	9	5	3	21
Health and Public Service						
1974-1975	3	1	10	6	11	31
1975-1976	4	24	5	5	14	52
1976-1977	3	10	15	7	9	44
1980-1981*	7	6	21	18	29	81
Home Economics						
1974-1975	1	0	1	0	0	2
1975-1976	1	0	1	0	0	2
1976-1977	2	0	2	0	0	4
1980-1981*	2	0	6	4	0	12
Industrial Education						
1974-1975	6	18	8	3	1	36
1975-1976	11	5	5	0	11	32
1976-1977	12	4	18	6	6	46
1980-1981*	16	19	24	13	7	79
Industrial Arts						
1974-1975	0	0	0	0	0	0
1975-1976	0	0	0	0	0	0
1976-1977	0	0	0	0	0	0
1980-1981*	0	0	0	2	0	2
Diversified Education						
1974-1975	0	0	0	0	0	0
1975-1976	0	0	0	0	0	0
1976-1977	0	0	0	0	0	0
1980-1981*	0	0	0	0	0	0

Source - Local District Questionnaire

*Cumulative through 1980-1981

Table 5

RATIO OF PRESERVICE PRODUCTIVITY TO TOTAL
UNDUPLICATED (FULL & PART TIME) NUMBER OF
PERSONNEL EMPLOYED 1975-76

<u>Program Area</u>	<u>Ratio</u>
Agri-Business	.045
Business & Office Education	.044
Distributive Education	.051
Health & Public Service	.009
Home Economics	.036
Industrial Education	.031
Industrial Arts Education	.089

Table 6

STATEWIDE RATIO OF NEW DEMAND
TO CURRENTLY EMPLOYED TEACHERS

<u>Program Area</u>	<u>1975-1976</u>
Agri-Business	.056
Business and Office Education	.030
Distributive Education	.030
Health and Public Service	.105
Home Economics	.042
Industrial Education	.049
Industrial Arts Education	.089
Diversified	.049

Table 7

STATEWIDE SUPPLY AND DEMAND DISCREPANCY

<u>Program Area</u>	<u>New Supply (Teacher Education Productivity)</u>		<u>New Demand</u>		<u>Discrepancy</u>	
	74-75	75-76	74-75	75-76	74-75	75-76
Agri-Business	48	44	62	55	-14	-11
Business and Office Education	188	180	167	87	+21	+93
Distributive Education	26	71	39	45	-13	+26
Health and Public Service	56	13	102	137	-46	-124
Home Economics	126	113	131	84	-5	+29
Industrial Education	98	118	195	181	-97	-63
Industrial Arts Education	131	106	155	92	-24	+14
Diversified	0	0	28	26	-28	-26

Table 8

PRODUCTIVITY AND CAPACITY OF PRESERVICE PROGRAMS 1974 - 1975

		<u>Productivity*</u>	<u>Capacity</u>	<u>Discrepancy</u>
Administrative	74	----	50	----
	75		50	
Guidance and Counselling	74	----	60	----
	75		60	
Diversified Education	74	0	10	+10
	75	0	10	+10
Agri-Business	74	48	78	+30
	75	44	78	+34
Business Education	74	188	171**	-17
	75	180	171**	- 9
Distributive Education	74	26	90	+64
	75	71	90	+19
Health & Public Service	74	56	110	+54
	75	13	110	+97
Home Economics	74	126	142**	+16
	75	113	142**	+29
Industrial Education	74	98	217**	+119
	75	118	217**	+99
Industrial Arts Education	74	131	114**	-17
	75	106	114**	+ 8

*From University Funding Guides

**Capacity adjusted for Non-Respondents.
University Teacher Education Questionnaire

REFERENCES

- Copa, G. and Korpi, R. W. The Need for and Sources of Teachers in Vocationally Reimbursed Positions in Minnesota. Minneapolis, Minnesota: Minnesota Research Coordinating Unit for Vocational Education, University of Minnesota. July, 1974.
- Evans, R. N. Vocational Education: Staff Development for the 70's. Washington, D. C.: Technical Education Research Centers, Inc., 1974. (ED 099 690)
- Ferns, G. W. Michigan's Vocational Technical Education Personnel Development Needs 1971-75. (ED 060 192)
- Goldstein, H. and Swerdloff, S. Methods of Long-Term Projection of Requirements for Supply of Qualified Manpower. Paris: UNESCO, 1967.
- Harris, E. A Study of the Demand and Factors Related to the Improvement of Occupational Education Personnel Development Programs in the State of Illinois. Dekalb, Illinois: Northern Illinois University, 1973. (ED 084 410)
- Swanson, G. I. The Preparation of Teachers of Vocational Education: Project Baseline Report. Washington, D. C.: Technical Education Research Centers, Inc., 1974. (ED 099 690)